

Merrick & Company

Customer Success Story

Project

Lackland Air Force Base Airmen Training Complex

Client

The U.S. Army Corps of Engineers

Autodesk® Revit® Architecture

Autodesk® Revit® Structure

Autodesk® Revit® MEP

AutoCAD®

Autodesk BIM solutions provide an accelerated process for exploring ideas, swapping one for the next until you find the best fit. It's an approach that allows you to think critically about every decision without losing time.

—Tammy Johnson
Project Manager
Merrick & Company

Housing for 1,200—times eight.

Merrick & Company uses Autodesk BIM solutions to help deliver a \$900 million military facility.



Rendering of the new Lackland Air Force Base Airmen Training Complex.

Project Summary

Lackland Air Force Base plays a vital role in ensuring the mission readiness of the U.S. Air Force—all enlisted personnel attend basic military training at this Texas facility. After serving for decades, the Base's 10 dormitories and four dining halls began to show their age. When maintenance became too expensive, the Air Force decided to undertake a multiyear, \$900-million project to demolish the dated buildings and replace them with larger state-of-the-art facilities. When complete, each of the eight new Airmen Training Complexes (ATCs) will feature a running track, a drill pad, utility infrastructure, and housing for more than 1,200 trainees.

Merrick & Company, which is providing architecture and engineering services on the massive undertaking, designed the project with building information modeling (BIM) solutions from Autodesk. Tammy Johnson, project manager on the ATCs, explains why Merrick & Company opted to use BIM: "The larger the project, the more chances there are for issues to drive up costs or cause delays. Autodesk BIM solutions helped us develop ideas more quickly and better coordinate our large design team, helping us to overcome an unanticipated three-month delay and complete the design phase on time."

The Team

Responsible for developing an initial project program, choosing the design team, and managing feedback from project stakeholders, the U.S. Army Corps of Engineers acted as the client, and the Air Force Center for Engineering and the Environment (AFCEE) funded the project. The Corps chose Aurora, Colorado-based Merrick & Company to provide architecture and engineering services for the project.

With a design group specializing in facilities for the military and government, Merrick & Company has worked with the Air Force and the Corps on dozens of projects, but few have been as large or high profile as the ATCs. "We're proud of our role in designing the new ATCs, and as our largest BIM project using Autodesk Revit-based software to date, it helped to demonstrate that BIM delivers value to each discipline while keeping the team focused on the project as a whole," says Todd Behning, CAD/BIM manager for Merrick & Company.

The Challenge

Calling for the construction of one new ATC each year for eight years, the project schedule allotted only one year for Merrick & Company to design the first facility, which would serve as a prototype for the other seven ATCs. And as the AFCEE wanted to keep costs under control, the team planned to leverage BIM to closely monitor the cost implications of design decisions throughout the project.

Using BIM helps overcome three-month delay.

"Reviewing the requirements, we saw a project that needed to progress quickly across disciplines," Behning explains. "We also wanted to be able to account for costs without slowing down the team. Having used Autodesk BIM solutions before, we were confident the software could help us overcome both challenges."

The Solution

Merrick & Company and the Corps launched the project by holding a design charrette. There, the Corps presented the design team with some initial floor plans developed using AutoCAD® software, and attendees discussed the various design options. After the charrette, Merrick & Company hit the ground running, using the floor plans to build an initial model of the project in Autodesk® Revit® Architecture software.

Johnson describes how the 2D floor plans evolved into a more detailed model: "Revit Architecture software allowed us to develop a model from AutoCAD software more quickly, and as we progressed, we added details. Each ATC has five stories, with sleeping quarters for 1,248 on floors two through four. The ground floor is mostly open, providing a shady space for training."

Behning adds, "As we see it, BIM helps the owner as much as the design team. Because we used a BIM approach, our client could review any aspect of the facility at any time in 3D. The design is always ready to be viewed as a detailed model with BIM, making the whole process more transparent for the client."

Hot Showers for Hundreds

Leveraging the Revit Architecture model as a background, the engineers began designing the building systems in Autodesk® Revit® MEP software and the structural elements in Autodesk® Revit® Structure software.

The MEP engineers helped ensure that the ATCs would be straightforward to maintain by centralizing the HVAC and the hot water boilers on the fifth floor, while the BIM process made it easier to connect the systems to the occupied spaces. "Designing systems to serve 1,248 people can be challenging, especially when the architects are still fine-tuning the floor plan," notes Philip Pleiss, a mechanical designer with Merrick & Company. "You don't want to lose time by placing pipes in a wall that's been moved. By harmonizing our work against the architectural model, we didn't lose time as other teams made changes. We adjusted our model and kept going."

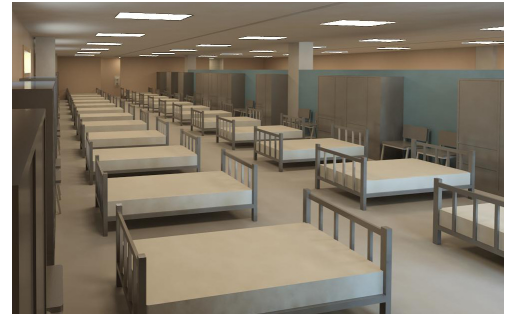
Engineering for Value

Throughout the project Merrick & Company's design team used Revit Architecture software to explore options for keeping material costs down. Relatively late in the project, the client requested further cost savings, and decided to eliminate one of two large elevators. "Our designs were 65 percent complete when we removed the second elevator, so all the disciplines had to make significant modifications to their models," Johnson recalls. "The team manipulated their Revit-based models to account for the change without missing a beat."

Accommodating Changing Regulations

After completing the design for the first ATC, structural requirements for the second ATC needed to be modified in order to comply with increasingly rigorous standards.

Chris Tippet, the project engineer for Merrick & Company, explains how the team incorporated the new standards. She says, "We turned to Autodesk Revit Structure software to help us modify the structural design quickly. The architects and MEP engineers could then more easily account for the adjustments in their Revit-based software. Making



Rendering of ATC dorm.

and coordinating the changes was a surprisingly fast and seamless process with BIM."

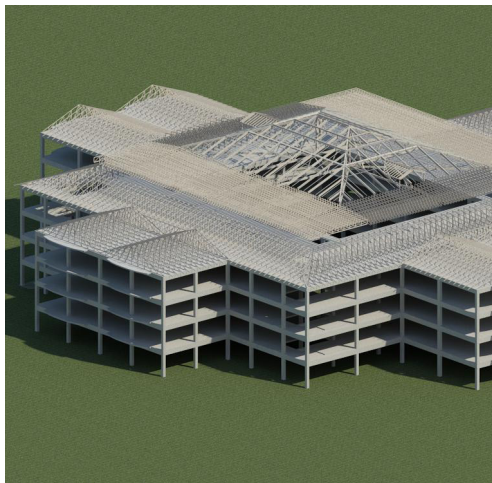
The Result

The first of the new ATCs at Lackland Air Force Base will be ready to house personnel-in-training in early 2011, and construction is set to begin on the second facility in 2010. The design team at Merrick & Company reports that BIM helped them overcome issues that could easily have led to setbacks. "Even after an unscheduled three-month delay in the review process, with help from Autodesk BIM solutions, we met our final completion deadline," says Tippet.

Observing that BIM is a process, and not just a set of software tools, Johnson says, "Autodesk BIM solutions provides an accelerated process for exploring ideas, swapping one for the next until you find the best fit. It's an approach that allows you to think critically about every decision without losing time. Clients benefit from significant value and attention to detail, even on fast-track and budget-constrained projects."

Learn More

Visit www.autodesk.com/government to find out how BIM can enhance your public-sector projects.



Rendering of ATC structure.

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